Space Weather Forecast

Issued on Tuesday, 16 November 2021 at 00:30 Local

This forecast provides a four day assessment of space weather events. The probabilities stated below are for reaching or exceeding the given levels. For more information about space weather impacts please see the Met Office Space Weather Scales https://www.metoffice.gov.uk/weather/learn-about/space-weather/uk-scales

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Space Weather Forecast Headline: G1/Minor Geomagnetic Storms Likely Day 1 (16th).

Analysis of Space Weather Activity over past 24 hours

Solar Activity: Solar Activity was Very Low, with no notable flares in the last 24 hours. There are three small and magnetically simple sunspot regions on the Earth-facing disc, including a new region which rotated onto the disc in the last 24 hours. No Earth-directed Coronal Mass Ejections (CMEs) were observed.

Solar Wind / Geomagnetic Activity: The solar wind speed was initially at background levels, however these increased from around 15/1500 becoming elevated by the end of the period, peaking 525km/s. The Earth also moved through a notably dense region of solar wind during the first half of this increase. The Interplanetary Magnetic Field strength was initially weak, but became strong by 15/1800 UTC, before easing a little again during towards midnight. The north-south component also became moderate to strong, but varied frequently between positive (northward) and negative (southward) values, but with the strongest fields in a northward direction. Geomagnetic activity increased from Quiet (Kp 0-2), to give 2 Active periods 15/1800-2400 UTC.

Energetic Particles / Solar Radiation: The count rate of energetic particles (high energy protons) remained at background with no solar radiation storms observed.

Four-Day Space Weather Forecast Summary

Solar Activity: Solar activity is expected to be mostly Very Low, with a slight chance of Common-class flares.

Solar Wind / Geomagnetic Activity: There are no Earth-directed CMEs. Current elevated to solar winds could become strong for a time, due to the ongoing fast wind which likely comes from a coronal hole. These conditions then easing day 2 onward with no further enhancement expected. Geomagnetic Activity is expected to be Active to G1/Minor Storm at first, easing to Unsettled to Active, with a decreasing chance of G1 Minor storm intervals by day 2 (17th). Activity then easing to be Quiet to Unsettled day 3 (18th) onward.

Energetic Particles / Solar Radiation: The count rate of energetic particles (high energy protons) is forecast to remain at background levels with no solar radiation storms occurring.

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Met Office Space Weather Forecast

Geomagnetic Storms:

Geo-Magnetic Storm Probability (Exceedance)	Level	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC) (%)	Day 2 (00-24 UTC) (%)	Day 3 (00-24 UTC) (%)	Day 4 (00-24 UTC) (%)
Minor or Moderate	G1 to G2	No	60	10	1	1
Strong	G3	No	1	1	1	1
Severe	G4	No	1	1	1	1
Extreme	G5	No	1	1	1	1

Radio Blackouts - X Ray Flares:

X Ray Flares Probability	Level	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC) (%)	Day 2 (00-24 UTC) (%)	Day 3 (00-24 UTC) (%)	Day 4 (00-24 UTC) (%)
Active	R1-R2 M Class	No	1	1	1	1
Very Active	R3 to R5 X	No	1	1	1	1

Solar Radiation Storms - (High Energy Protons):

Radiation Storms Probability (Exceedance)	Level (cm^{-2} sr^{-1} s^{-1})	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC) (%)	Day 2 (00-24 UTC) (%)	Day 3 (00-24 UTC) (%)	Day 4 (00-24 UTC) (%)
Active	≥ S1	No	1	1	1	1
Very Active	≥ S3 *	No	1	1	1	1

* S3 ≥ 10 MeV ≥ 1000 pfu and / or ≥ 50 MeV ≥ 10 pfu. (pfu = $cm^{-2}sr^{-1}s^{-1}$)

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